

REMARKS

The Examiner has rejected claims 22-28 and 40 as being obvious over Kishi in view of Homma '713. This rejection is respectfully traversed.

(1) The fabric of Kishi does *not* disclose a sizing agent in an amount such that it can bind fiber yarns to each other.

In Kishi, "a sizing agent in amount of 0.2-1.8% based on the weight of the yarns" is applied to twisted multifilament yarns made of carbon fibers, which are then dried. Column 10, lines 22-41, of Kishi; emphasis added. The dried yarns are then wound on a bobbin. *Id.* "Then the yarns are untwisted while rotating the bobbin. By this operation, due to the air resistance exerted to the yarns, a balloon is formed ... [and] the sizing agent is peeled off by the friction of air. As a result, the fibers become free from restraints by each other and the yarns are opened." *Id.* Subsequently, the opened yarns of Kishi are used for making a fabric.

Claim 22 recites "a woven fabric impregnated with a resin and a binder." Persons of ordinary skill in this art would recognize that the woven fabric of Kishi would *not* have enough sizing agent to bind fiber yarns to each other at crossing points to maintain flatness of the woven fabric. Therefore, the Examiner's statements on page 2, line 3 from the bottom to page 3, line 4, of the Action are totally meaningless.

For example, the Examiner states, "The skilled artisan would have been motivated [by Kishi] to vary the amount of binder¹ by the desire to modify the weight and flexibility of the fabric." Even assuming that a person of ordinary skill would have been motivated to varying the amount of sizing agent in the range disclosed in Kishi "to modify the weight and flexibility of the fabric," one would still not have arrived at the claimed invention. This is because the amount of sizing agent disclosed in Kishi is *insufficient* to bind fiber yarns to each other, regardless of

¹ Kishi discloses a sizing agent, not a binder, as explained below.

the composition of the sizing agent and regardless whether the sizing agent of Kishi is construed to within the scope of the claimed binder.

Also, Homma '713 does not disclose "a woven fabric impregnated with ... a binder ... wherein an amount of the binder used is within about 0.5 to 15 g/m²." Therefore, even a combination of Kishi and Homma '713 would not arrive at the claimed invention.

(2) The claim term "binder" is not so broad that it can reasonably include the sizing agent of Kishi.

A "binder" is different from a "sizing agent." The binder binds the warp and the weft at said crossing points (see page 7, lines 22-24, of the specification), which Kishi's sizing agent does not do.² The definition of sizing agent found by the Examiner is that a sizing agent is "a generic term for compounds applied to yarn or fabric to improve ... their stiffness." See Action of January 29, 2001. The Examiner's position has been "that Kishi utilizes a binder for this purpose [i.e., to maintain yarn flatness] in the form of a sizing agent." *Id.*

A person of ordinary skill would have recognized that a "sizing agent," as defined in the Action of January 29, 2001, is not a binder. Instead, the chapter entitled "CARBON FIBERS," *International Encyclopedia of Composites*, Vol. 1, p. 211 (1990), explains the purpose of a sizing agent as follows:

A final surface modification step [during the manufacture of carbon fibers] consists of the application of a thin layer of finish, or size.³ Most of the time, this material is the same as the matrix resin (e.g., the principal component of the matrix without the curing agent). This coating is applied primarily to improve wetting, provide protection against surface damage, and facilitate handling in subsequent processing.

² A sizing agent, however, could also be applied to the yarns of the claimed prepreg for improved handling of the yarns.

³ Also referred to as "sizing" by persons of ordinary skill in this art.

(3) There is a fallacy in the motivation provided by the Examiner for combining the cited references.

On the issue of combining references, the Federal Circuit in *In re Lee*, 277 F.3d, 1338, 61 USPQ2d 1430 (Fed. Cir. 2002), specifically states, “The need for specificity pervades this authority ... [and] *particular findings* [not just any reason] *must* be made as to the reason the skilled artisan, with *no* knowledge of the claimed invention, would have selected these components for combination in the manner claimed.” [Citations omitted; emphasis added.] The court was especially critical of the resort to common sense or general knowledge as the basis for findings of motivation. In light of the decision in *In re Lee*, Applicants submit that a *prima facie* case of obviousness has not been established for the following reasons.

In this case, there is no motivation or need to modify Kishi’s wet process preregs to use a line-like binder to arrive at this invention. The Examiner’s stated motivations are “to modify the weight and flexibility of the fabric” (see pending Action, page 3, lines 3 and 4) and “the desire to increase a resin’s ability to impregnate the prepreg,” (see Action of August 27, 2001, page 3, lines 10 and 11 of paragraph 4). Without evidence in Kishi or Homma ‘713 of a reason to look at Homma ‘713 as useful for solving any problem in Kishi, the rejection cannot stand.

The Examiner’s stated motivations are not based on what Kishi says. In fact, the Examiner has acknowledged that “Kishi does not specifically teach applying said binder in a line-like manner.” The Examiner refers to the term “sizing agent” disclosed in column 10, line 22, as “binder.” Even this is incorrect. The reference to “sizing agent” in Kishi would not have been thought to refer to such a binding agent, as a binder that “binds said warp and said weft at said crossing points” (as recited in claim 22) is unnecessary for Kishi’s preregs. The reason why it is unnecessary for Kishi’s preregs is explained with supporting evidence in Mr. Nishimura’s second declaration of November 8, 2001. The second declaration shows that the problem of low cover factor does not occur in Kishi’s wet preregs made of a woven fabric of

3K yarns even when there is no line-like binder. Thus, there is no motivation in Kishi's disclosure, or a reason for a person of ordinary skill in this art, to even to look to a reference like Homma '713 showing binding agents when there was no problem of low cover factor in Kishi's prepregs.

Now, the next step is to take these motivations to see what Homma '713 says about them. The first "motivation" stated by the Examiner is not answered by Homma '713 at all, so it cannot be valid as a basis for rejection. The second "motivation" stated by the Examiner has some disclosure in Homma '713, but not in a way that would have suggested a person of ordinary skill in this art to combine Kishi and Homma '713. The passage that the Examiner relies on (see Homma '713, column 6, lines 47-57) is not directed to impregnation of the matrix resin in the woven fabric at all, but rather to the problems of binding dry woven fabrics. The wet process resins of the invention and Kishi do not suffer from the "integration" problems solved by Homma '713.

Applicants furthermore point to Mr. Nishimura's first declaration of May 12, 2000, as evidence that no person of ordinary skill in the art, looking to solve process of wet process prepregs, would have considered Homma '713 for solutions. First, the Examiner already recognizes that dry and wet prepregs are different, as he withdrew the rejection on Homma '713 and Homma '107 because of the amendment of the claims to require wet prepregs. See Action of September 12, 2000. Second, Mr. Nishimura has shown in the declaration of May 12, 2000, that the Homma '713 prepregs have cover factors that are well below the claimed range, so no one trying to improve cover factors and arrive at the claimed invention would have considered Homma '713 to be helpful. As a result of Mr. Nishimura's findings, there is no evidence that persons of ordinary skill in the art would have looked to Homma '713 to produce prepregs having a cover factor of 90% or more.

All claims, therefore, are in condition for allowance and a notice thereof is solicited.⁴

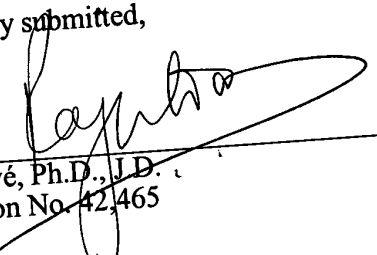
Attached is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned **"Version with markings to show changes made."**

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Respectfully submitted,

Dated: May 28, 2002

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⁴ The amendment of claim 22 is simply for clarity, but not to overcome the prior art rejection.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims

22. (Four Times Amended) A cloth prepreg made by a wet process comprising a woven fabric impregnated with a resin and a binder distributed in a line-like manner on the fabric to maintain yarn flatness,

the fabric comprising a number of crossing points of warp and weft in a range of from 2,000 to 70,000/m², said warp and said weft [yarns] being substantially free from twist, a width of 3 to 20 mm and a flatness as defined by a ratio of yarn width to yarn thickness of at least 20,

the prepreg having a cover factor of at least 90% and

wherein an amount of the binder used is within about 0.5 to 15 g/m².